physician, and, if required, of nurses speaking his language."

To guarantee the payment of indemnities and expenses the employer is obliged to obtain insurance with an insurance company approved of by the Commission. Provision is made, however, at the discretion of the Commission, for certain companies to act as self-insurers, adequate guarantees being demanded.

Notice of an accident must be given to the employer by the injured within ten days. In the case of an accident entailing incapacity for more than seven days, the employer is required to notify the Commission within fifteen days. Many minor accidents will accordingly not become the concern of the Commission. If the incapacity lasts less than seven days the injured person is still entitled to medical attendance. Payments for temporary total incapacity at the rate of two-thirds of the daily wages begin only on the eighth day after the accident unless the incapacity exceeds six weeks in which case the first week will be compensated for.

A schedule has been prepared indicating degrees of permanent partial incapacity in respect to certain injuries. In cases not provided for in the schedule this is intended to serve as a guide, taking into account "the injured person's capacity to continue the same kind of work as he was doing before the accident or to take up another kind of occupation."

With so many interests touched by legislation of this kind—those of the employer, the employee, the insuring companies, the medical and legal professions—it is not to be wondered at that differences of opinion should arise concerning certain minor details of the Act, but the new enactment is recommended to the study of those interested in industrial medicine as a constructive measure. There are those, who, having given much study to corresponding acts in various countries, believe that the Quebec Workmen's Compensation Act of 1928 embodies legislation that for fairness and practicability leaves little to be desired. The members of the medical profession of the Province are recommended to familiarize themselves with the details of the Act and to give a full measure of support to the Commission in the onerous task which they have assumed.

Men and Books

AN EARLY CANADIAN BIOLOGIST—MICHEL SARRAZIN (1659-1735): HIS LIFE AND TIMES*

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The *David Prize* for the best essay on Canadian history was awarded for the year 1926 to Dr. Arthur Vallée of Quebec, for a brilliant biographical and historical study bearing the above title. Published in the following year, 1927, by the King's Printer, as one of the series of the *Quebec Archives,* this work forms a neatly bound volume of 299 pages, of which 220 are occupied by the monograph itself and the remainder by an appendix containing a selection from the original documents on which it is based (*Pièces justificatives*), the latter forming not the least valuable part of a very important publication.

The appearance of this book is a real event, not only in Canadian medicine itself, but in the history of medicine on this continent as a whole, for it covers a period in which civilization was successfully replacing barbarism throughout all the then known parts of North America, and it unfolds a chapter from the history of this time that until now has been but too little understood and quite inadequately portrayed. As its title implies, this book not only rescues from partial oblivion the name of an illustrious pioneer in medicine and biological research, whose achievements were well abreast of those of any of his contemporaries in these fields on this side of the Atlantic; it also presents a clearly defined picture of the practice of medicine in contemporary French Canada, in what is now the Province of Quebec, during the latter part of the 17th and early 18th centuries, some one hundred and fifty years after its first settlement. In this district, amid a scattered population that numbered at this time about 15,000 souls, nurtured under the ministry of the Catholic Church and her devoted sisterhoods, but unprotected as yet by the Act of Registration of 1788, a great variety of practitioners, regular and irregular, flourished. Among them were a few qualified barber-surgeons with experience gained in France, and their apprentices, as well as other persons of honest purpose, locally trained or self-educated, whose scanty knowledge was eked out by their gift of commonsense, as well as midwives trained in France or practising untrained. To these were added a host of

* *Un biologiste Canadien, Michel Sarrazin (1659–1739). Sa vie, ses travaux, et son temps.* Par Arthur Vallée, Professeur a l'Université de Laval. *Prix de Concours de l'Histoire de Canada, 1926. Archives de Québec.* Imprimé par L. S. Proulx, Imprimeur du Roi, Quebec, 1927, viii, 291 pages. Published also by La Librairie Garneau, paper cover.

charlatans, whose trade throve upon the credulity of the people and the quaint beliefs and customs of the time. Among this heterogenous crowd of worthy and unworthy followers of his art, the name of Michel Sarrazin, physician-in-chief of the King to the hospitals of New France, student of the École de Médécine of Paris, and Doctor of Medicine of the University of Rheims, Corresponding Member of the Académie Royale des Sciences, contributor to its Transactions of original dissertations on the anatomy and physiology of animals indigenous to Canada, and donor to the Jardin Royale of Paris of living specimens of practically the entire Canadian flora of his vicinity, stands out pre-eminent, as does that of his great successor in the next generation, Jean-Théophile Gauthier.

Dr. Vallée explains in his introduction that, in order to depict the figure of this ardent research worker and foremost physician of his generation from the scanty material available, he has considered it essential to reconstruct as far as possible his environment, and to recall the status of the art and science of medicine at that time, both in Old and New France, as well as the more important personnel of the medical confraternity by whom he was surrounded during his fifty years of active professional life at Quebec and Montreal. For this purpose, as well as for that of the biography itself, he has made a careful research in the Dominion and Provincial Archives, in the Paris offices and libraries, and in the *Bulletin des Récherches Historiques* and elsewhere, for documentary evidence of all sorts, reference to which is shown throughout the book by footnote or annotation. The time has passed, he writes, for the birth and origin of Canadian history to rest on legendary tales or unsupported tradition. The occasion has arrived for the scientific presentment of historical facts based only on actual documents and on those precious but all too scanty records of old families and their dependencies which constitute the true background of the Old Régîme in Canada. Unfortunately, apart from the Public Archives, little remains of a personal nature that could initiate us into the private life of Sarrazin, or reveal anything of his physique or character. Apart from his scientific publications, all that we have to go upon of a personal nature are several letters, thirteen in number, dealing with his administrative functions or scientific work, discovered at the *Académie des Sciences, the Bibliothèque de Rheims,* the *Séminaire de Québec,* and the *Bibliothèque Nationale.* All the more necessary has it been, therefore, to review the few data that we have of his liffe in the social, political, religious, scientific, industrial and commercial setting of his time and place, where we can see him in his true values in very close proximity to those great names who in that era built the history of New France. "Here it is that we have tried to retrace Michel Sarrazin de l'Etang."

The Foreword closes with an appeal to his French compatriots to be worthy of the high tradition that is unfolded to them in this book and to follow Sarrazin in making a definite contribution from French Canadian medicine to the science of the world. It may well be transcribed here.

> "Car à côté des gloires militaires et politiques, ecclésiastiques et sociales, il reste le prototype de la science des premiers jours, et peut-être de toujours à date, au pays de Québec. Or la science fait partie de l'histoire du monde. Au même titre que les arts et les lettres, elle a sa place dans la suite des temps. . . . . Et nous voudrions en citant Sarrazin aux générations montantes, provoquer dans les esprits la réaction nécessaire a l'éveil scientifique national. . . . . L'homme qui dans son lourd labeur a voulu porter une attention spéciale aux deux éléments qui devaient plus tard constituer notre emblème: le castor et l'érable, semble bien mériter qu'on se souvienne de lui. Nul ne peut à plus juste titre devenir le guide de ceux-là que, suivant son exemple reprendront le sentier tracé pour fournir à leur tour l'apport de la science canadienne-française à la science mondiale."

Who then was Michel Sarrazin, and what were his contributions to the science and life of his time? And what insight does Dr. Vallée's book give us into the practice of medicine in this country before the English conquest of 1760?

A reply may best be given by tracing briefly below the thread of Dr. Vallée's narrative. It must be understood, however, that in order to do justice to this subject the book itself must be read and studied by all those interested. For it is a classic in its line, as concise and authoritative as it is romantic and informing; and is moreover a pioneer achievement in a virgin field — the first authentic history of medicine in French Canada.

I. The Colony At the End of the Seventeenth Century

Origin of Michel Sarrazin

Michel Sarrazin was born on September 5, 1659, at Nuits-sous-Beaune in Burgundy, the son of Claude Sarrazin, bailiff of the estates of the Abbaye des Cîteaux and of Madeleine de Bonnefon his wife. These names are met with some two centuries earlier in Upper Burgundy, the country of Buffon and Daubentou. He arrived at Quebec in the summer of 1685, at the age of 26, bearing the title of surgeon, on a ship carrying a marine detachment (so-called after the ministry that despatched them). He thus formed a part of the large immigration to Canada of the sturdy Burgundian race that began in 1675 and permeated the colony in the early 18th century. Another surgeon of the same origin, Jacques Desquay, preceded him by thirteen years and settled at Three Rivers. Sarrazin's arrival in Quebec coincided with that of the Abbé de St. Valier and the Intendant Denon-

ville, and it is probable that his services were immediately called upon in the epidemic that broke out among the accompanying regiment, and for other exigencies of the colony; for the following year, September 12, 1691, he was appointed by the Conseil Supérieur, Surgeon-major to the troops in Canada. This was ratified by royal mandate from Versailles five years later in the following terms:

"Aujourd'hui 16 mars 1691 le Roy estant à Versailles voulant commettre une personne capable et expérimentée au fait de la chirurgie pour traitter et panser les soldats des troupes qu'Elle entretient au pays du Canada, et sçachant que le Sr. Sarrazin a les qualités nécessaires pour s'en bien acquitter, Sa Majesté l'a retenu et ordonné, retient et ordonne chirurgien des troupes qu'Elle entretient au dit pays auz appointemens qui luy seront ordonnez par les estats qui sont expédiez chaque année pour l'entrétien des dites troupes et autres dépenses à faire au dit pays sour le service de Sa Majesté. Mandé au Sr. Comte de Frontenac, etc."

The colony at the time of Sarrazin's first sojourn in Canada (1685-1694) could no longer be considered uncivilized, but it rather mirrored. in spite of material difficulties, the life of the period in the Provinces of Old France. The population was already divided into parishes with larger centres at Quebec, Montreal and Three Rivers, and to these was coming an incessant influx of colonists of high as well as low degree. Law and order was maintained by the institution of the *Conseil Souverain de Québec* (later the *Conseil Superieur*), which enforced the edicts and ordinances of the French rule and judged the difficulties of the community as they arose. This Council, formed as it was of the élite of the country, and numbering on its roll all the great names of the colony, constituted a local aristocracy of high repute. The clerical administration was organized on a peculiarly liberal basis for that epoch, with secular and regular clergy, while education was cared for by primary schools, a preparatory Seminary and Jesuit College at Quebec and the Sulpicians and others at Montreal. In spite of monopolies, commerce and industry, under the recent wise administration of the patriotic Intendant Talon, were flourishing, and to the fur trade, lumber and fishing export, were added grist mills, tanneries, etc., for home manufacture of the necessities of life. The Hôtel Dieu de Québec, founded by the Augustinian nuns in 1639, had become in 1690 a well-organized hospital of some fifty beds, containing a ward for men and another for women, with a place reserved for the care of sick officers and a Hôpital Général, caring especially for the mentally afflicted, had also been opened. Among the practitioners who had come as "medical colonists," or from an interest in the fur trade or other reasons, are mentioned especially at this time Duchesne, a surgeon whose name is attached to medico-legal reports of the time, and who became proprietor of the later Plains of Abraham; Giffard, first physician to the Hôtel Dieu of Quebec, who received the Seigneury of Beauport in acknowledgement of innumerable services, and who was the first Canadian habitant to receive letters patent of nobility; and Jean Madry the noted barber-surgeon, the first alderman of Quebec, who succeeded Giffard at the Hôtel Dieu, and first established the practice of surgery in the colony; and, as of some prestige also, Timothy Roussel and Beaudoin. "To these, *médecins colons*, and many others less in the limelight, came Michel Sarrazin to lend the strong hand of his fellowship and support. Like them, conscious of duties beyond the bounds of his profession, he mingled with the entire local life. More than any of these he was to shed lustre upon Canadian science at its dawn, and on the medicine of this time. But, with perhaps a wider horizon, he remains of the same race and type. A brave man who knows how to do hard labour, a pioneer such as France has always known how to supply to the entire universe, carrying everywhere his faith, his science and his initiative."

Of Sarrazin's actual professional activities during this early period of his life we know relatively little. His name occurs as surgeon attending several duels, and from his military appointment he was certainly active among the wounded during the siege of Quebec by Sir William Phipps in 1690. In 1693, also, he was appointed physician to the Hôtel Dieu by the Sisters, who held him in high esteem, and he undoubtedly practised his art, not only among the troops but throughout the colony, where under arduous conditions of travel he is said to have given gratuitous surgical aid within a radius of sixty leagues. On one of his visits to Montreal in the year 1692, he fell seriously ill and made a notarial will dated at the Hôtel Dieu and preserved in the City Archives, in which he bequeathed his surgical books to three local surgeons, the Sieurs St. Amand, La Source and La Sonde, who had evidently attended him. The bequest was revoked later in a second will made during a subsequent illness of his at Quebec.

But the most interesting document extant relating to him at this time is a "*Mémoire des Médicaments nécessaires pour les Troupes du Roy au Canada pour envoyer en 1693,*" which is published here in the Appendix. It is, as Dr. Vallée remarks, a perfect example of the polypharmacy of the day, being headed by the Theriacum of the middle ages (said to contain over ninety ingredients and containing also a rich supply of essential oils, syrups, ointments, plasters, extracts and drugs of all kinds, including the much disputed antimony), as well as "2 dozen lancets for bleeding," syringes and cauteries for wounds, and other implements of the surgeon's armamentarium. Comparison of this list with that drawn up by Jackson the surgeon in charge of Phipp's forces is said to

have shown a very similar content in the English one.

Little or no evidence appears at this period of the profound interest in natural history and the scientific trend which were so prominent a feature of Sarrazin's later life. Two facts only are significant of this. His intimate friendship with Franquelin, the hydrographer of the Jesuit College, and the dissatisfaction which he felt at the inadequacy of his training as a barber surgeon, led him, after eight years' practice in this country, to resign his military office and return to France for the purpose of obtaining further medical training and a university degree. The surgeon Beaudeau was appointed by Frontenac in charge of the troops in his place in 1693, and in 1694 Sarrazin sailed for France, to return to Canada three years later with the desired academic qualification, a trained scientist with connections established among the leaders in his field of research, and to become, in deed as well as in name, the foremost physician of New France and an important factor in her rapidly expanding national life.

II. MEDICINE IN THE SEVENTEENTH CENTURY SARRAZIN'S SOJOURN IN FRANCE (1694-1697)

There was apparently at this time some question of his entering the church, but his heart was evidently set upon his original vocation, and almost immediately after reaching Paris he seems to have entered upon his studies at the Ecole de Médecine, where he followed lectures at the amphitheatre Riolan, and received clinical instruction at the Hôtel Dieu de Paris. The degree of Doctor of Medicine, for which he had enrolled himself, called for a preliminary Master of Arts diploma, and a seven years' course of study, and that he was able to abridge these requirements within the three years of his stay in France is probably to be explained by the wide clinical experience which he had gained in practice in Canada. He presented himself in due course in 1697 for the Doctor's degree at the University of Rheims, from which some thirty years later his son also graduated.

It is difficult at the present day to realize the great distinction that existed in Europe and particularly in France at this time between the *physician* and the *surgeon*. The latter's work was not considered so much an *art* as a *trade* for which no long preparation was necessary, and this was usually acquired in the provinces. As already intimated, practically all the qualified practitioners in New France were of this type of barber-surgeons, and it is little wonder that a man of Sarrazin's intellect and humane feeling should have felt the urge for wider knowledge for his treatment of the sick. To understand the tremendous intellectual impetus which a university training in Paris at that time must have brought to this mature student, whose mind had been sharpened by hard won experience, one must recall the real status of medicine itself at this time. The seventeenth century was, as is known to us all, a classic age. It opened with Harvey's discovery of the circulation of the blood, which gave the impetus to other researches in physiology already bearing fruit; chemistry and physics were, under the guise of mistaken mechanistic theories, still in course of development, and the great anatomists, such as Morgagni and Malpighi, were opening the door to modern conceptions of the structural changes in disease; while at the same time the English clinician Sydenham, who died in 1689, had, by his power of observation and method of delineation of certain disease entities and their rational treatment, brought these new found principles to a focus in the birth of the great science of clinical medicine. The Ecole de Médecine was itself full of discussion and eager disputation of these new ideas that were trembling in the air. Moreover, this Paris, under Louis XIV, was actively fostering two other great scientific movements, allied to medicine and ministering indirectly to its advancement, both of which became to Michel Sarrazin an avenue and a source of inspiration for his future work. These were the *Jardin des Plantes,* and the *Académie Royale des Sciences.*

The *Jardin Royale* or *Jardin des Plantes* (which became after the Revolution the Museum of Natural History of Paris) was founded in the reign of Louis XIII by two "médecins du Roi" Herouard and Gui de la Brosse, and was not entirely unconnected with medical teaching, for in its deed of incorporation it was stated that since at the Ecole de Médecine the operations of pharmacy were not taught, it had been requested by the Sieur Bouvard that "three doctors chosen from the Faculty of Paris should be appointed to demonstrate to the students the interior of plants and all forms of medicines and to work on the composition of all kinds of drugs. . . .." How far this was carried out does not concern us, but under Louis XIV, Fagon, médecin du roi and director of the Jardin, a nephew of Gui de la Brosse and deeply interested in natural history, appointed from the province Joseph Pitton de Tournefort to be Professor of Botany at the Jardin. This de Tournefort, known as the great precursor of Linnaeus, is said to have founded the modern science of botany, and he it was who created the Museum of the Jardin, both from collections made in his own travels and from the fruits of the travels of others. Curiously enough, though a professor of botany, he was a fellow student in medicine of Sarrazin and sent in his thesis for the degree a year after the latter, in 1698,

and he became Sarrazin's earliest protector and his first link with the scientific world.

The Académie Royale des Sciences was the outcome in the middle of the seventeenth century of intimate reunions of the best minds of Paris, among whom are mentioned the Descartes and the Pascals. It was founded in 1666 by Colbert, but was reorganized and regularly constituted by Louis XIV in 1699. Here were assembled the great men of the period, represented in their respective fields by such names as Tournefort, Réaumur, de Fontenelle, Boerhaave, Roemer, Peter the Great, Mariotte, Malebranche, and Sir Isaac Newton. These and such as these were opening the way for the new thought and advances of to-day, and they went about their work of preparation for the centuries to come with a precision of which we are far too often ignorant. Above all, they sought to widen the field of knowledge by the utilization of all the sources of information accessible to them, both by sending forth their members to distant parts, and by entering into correspondence with carefully selected persons in foreign places, realizing that science has no country and that relations between research workers must be world wide in scope. Sarrazin was made such a corresponding member, selected by de Tournefort on March 4, 1699, at the same meeting at which Sir Isaac Newton was elected an "associé étranger."

III. Return to Canada. Sarrazin as Physician-Surgeon in New France (1697-1735)

Dr. Sarrazin's return to the colony after his three years' absence in Europe was probably hastened, rather against his will, by urgent appeals from the people and from the Intendant for the return of this man who "having acquired consummate knowledge of surgery during six or seven years in this country has gone to France to complete his perfecting in the study of medicine" (extract from letter from Champigny to the ministry dated November 6, 1695, soliciting his recall at a salary of 600 livres). It is quite clear from documents in the Quebec Archives that he came back with the definite intention of devoting at least a part of his time to the scientific interests he had developed in Paris and to utilize his distant location for the dissection of rare animals and researches into unknown plants, and not entirely to the treatment of the sick. That he contrived to carry out this resolution in full measure in the midst of an enormous and most engrossing practice was not the least remarkable feat of his crowded life. Even before his landing he was plunged into the vortex of professional responsibility and activity, for a serious epidemic of hæmorrhagic "purpura" (*i.e.*, typhus fever) so common under the cold and dampness and the complete lack of sanitation and inadequate food supply that prevailed on shipboard in those days, broke out on the vessel on which he sailed, and spread from it to the habitants of Quebec and to the Religieuses of the Hôtel Dieu, which was deluged with patients. Sarrazin threw himself into the necessities of the situation with complete devotion and with apparently extraordinary success, for practically all those affected on board were said to have recovered from a malady which twelve years before had carried off more than eight hundred victims! In the face of his already high reputation, the inevitable result was that he was besieged on all sides by individual patients and by requests for consultations from practitioners and curés, and in the year 1700 he was appointed by Royal mandate, and on a salaried basis, Médecin du Roi and Physician to all the Hospitals of New France, with a vast clientèle that stretched from Quebec and Three Rivers to Montreal, and *ex officio* chief medical attendant upon the Governor of the Colony, Monseigneur de Laval, de St. Valier, and all other notables.

In this same year 1700, another epidemic, this time of "la grippe," broke out, and was followed during the winter of 1702 by the terrible scourge of smallpox, which, starting from a house in which a passing Indian had died of the disease, spread like wildfire through the city, with such a multitude of fatalities that individual burial could not be carried out and fourteen to eighteen bodies were committed daily in a single grave, to the number of some two thousand. The same dread disease visited the city in 1703, and the "Mal de Siam" (yellow fever), which had appeared sporadically from time to time, assumed the proportions of an epidemic in 1709. Tuberculosis was apparently indigenous and so attracted the concern of Sarrazin that he sent a request to France, which was promptly granted, for asses to supply the milk then recommended for these patients. Added to these infections were those maladies dependent on the severe climatic conditions, rheumatism and lung diseases, and the scurvy still attended the poverty of diet that often prevailed.

In the domain of general medicine Sarrazin was no less successful than in these more specific fields. He cured M. de Callières, at least temporarily, of a dropsy, and his treatment of pleurisy by alternate diaphoresis and bleeding, which was written out by him in manuscript, was employed with success by M. de la Galissonnière (as recorded by Kalm), and is an excellent illustration of his therapeutic method. He used Glauber's salts in huge doses, and was officially employed by the ministry to investigate, with the apothecary of the Jesuits' College, the chemical composition of this salt. His botanical work again helped him to greatly enlarge his practical knowledge of local remedies. and he never fails to note in his description of

every plant which he gathered and studied, its pharmaceutical properties and the native uses to which it was put. The remarkable catalogue of two hundred living Canadian plants, presented by him to the Jardin des Plantes in 1704, reproduced in facsimile in the appendix of this book, abounds in such annotations. Some were noted to have diuretic properties; others were emetics or purgatives and, as in the case of the *Aster corona,* of use in epilepsy or convulsions; others, as the *Aralia canadense,* valuable for the treatment of anasarca; othere were used by the Iroquois to neutralize snake bite; still another as an abortifacient. Throughout, however, he maintains his critical judgment, rejecting certain substances, as a certain bark for the cure of cancer, after due experimentation, as of unproved efficacy.

Nor did he in the exercise of his new profession lay aside the art of surgery which he had practised so successfully before his return to France. The annals of the Hôtel Dieu of Quebec contain many records of wounds dressed and operations performed by him in this later period of his life. Of these the most interesting is the account of his treatment of the Mother Superior of the Congregationists in Montreal, who suffered from an intractable cancer of the breast, the result it is said of the irritative action of penitential girdles, and who came to Quebec for operation by him about the year 1720. After treating the field of operation for some ten days, and partaking of the Holy Sacrament with his patient and the entire community of the Hôtel Dieu, he proceeded to the amputation of the diseased organ, with complete success, for the reverend patient made a good recovery and lived in the full discharge of her activities for nineteen years longer, dying at the age of seventy-nine. Another operation of the same sort was performed by him on another nun a few months later.

On Dr. Sarrazin's activities in medico-legal questions we have not space here to dwell. Such enquiries were carried out regularly and efficiently, in small as well as large matters, under the Criminal Act of Louis XIV, and he was often called upon to officiate, as in an enquiry instituted on October 23, 1702 upon the cadaver of one La Chaume, assassinated.

Among the fellow practitioners who flourished in New France during this later period of Dr. Sarrazin's life are mentioned especially Berthier, who was also a salaried *médecin du roi* and assisted him in his attendance on the Governor, and was a surgeon at the Hôtel Dieu until 1725. Timothy Roussel, physician to the Hôtel Dieu, whose offices were in the rue de la Buade, where he built the famous house of the Chien d'Or; Benoit, surgeon to the hospital at Montreal, with his son, born in the country, and educated only by local studies; and the Soupirans who practised at Quebec through three generations with no other knowledge than what had passed from father to son. In a class by themselves were the Frères Boispineau, apothecaries at the Jesuit College, who openly practised medicine for many years with much success. Madeleine Bouchette, a trained midwife, who came out on salary from the king in 1722, represented another group, as did David and Gaschet, apprentices of Timothy Roussel. Among the most famous of the actual charlatans of the day were Marguerite Désy of Three Rivers, as celebrated for her cures as for her scandalous conduct; Phlem, who came out as a healer from France; and François Paris dit La Magdaleine and his wife. Considerable protest was made against this unchecked liberty of practice before the Act of 1788. Thus Lajus, physician to the Hôpital Général in 1712 petitioned the Conseil to limit the number of surgeons in Quebec to four, and to impose a fine of two hundred livres, with confiscation of all his drugs and instruments, on any surgeon from abroad setting up practice there; and Timothy Sylvain (Sullivan), of Irish extraction, was required by Governor de Beauharnois to pass an examination on his medical knowledge before Dr. Sarrazin, the only person in the country competent to judge of his fitness.

IV and V. A Member of the Academie Royale des Sciences. Sarrazin as Botanist and Biologist

At one of the first meetings of the Academy after its reorganization early in 1699, "all the Academicians present named different persons with whom they would be in correspondence on their respective sciences, either in the provinces or in foreign countries," and de Tournefort at this time designated Dr. Sarrazin to be his Corresponding Member. He remained in this relation until de Tournefort's death in 1707, and made most of his botanical communications, as well as his donations to the Jardin des Plantes, through the latter. Later, he presented them through the Abbé Bignon, until in 1717 he was again selected by the great scientist Réaumur to be his Correspondent, and from then on date most of his remarkable contributions on the anatomy and physiology of the native Canadian animals.

Sarrazin was thus only one of a large group of research workers scattered throughout the Antipodes, whose powers were being taxed along the same lines, and both missionaries and explorers had faithfully endeavoured to describe, and as far as possible classify, the new forms of plants and animal life. Considerably before his time too, both beaver and muskrat and their habits had been portrayed. Thus Dierreville had published at Paris in 1635 a *Canadensium plantorum*

historia, and Pierre Boucher, Governor of Three Rivers in 1665, wrote a *Histoire naturelle de la Nouvelle France, vulgairement dit Canada*, while an eighteenth century book bears the title *Traité des animaux à quatre pattes terrestres et amphibies qui se trouvent dans les Indes Occidentales*, followed by a *Traité des oyseaux*, and a *Traité des poissons*. It is, however, very interesting to note, writes Dr. Vallée, that he stands in the forefront of these workers by virtue of his methods, both of observation and approach, which are those of modern biology. "An incomparable anatomist, whose descriptions were not to be surpassed, he pushes this study to the finer structure of the tissues and organs, to a point that might be controlled without fear of error by the microscope. A physiologist in embryo, he does not stop at the gross findings of the great animal functions but dives without hesitation into the most complex mechanisms that form the field of biological researches to-day. Employing hypothesis with discretion, he insists upon an absolute control of all his observations, and confirms by repeated examination of the same object under varying conditions the findings which he believed he had made in his first research. . . . ."Moreover he had the passion of the research worker revealed in all his correspondence and all his intimacies, in his initiative and his power of overcoming difficulties and associatng others with him for purposes of verifying and controlling his original findings. In all these ways he revealed himself a consummate man of science."

His actual scientific contributions can be only briefly enumerated here. In botany there stands first of all his great contribution to the Jardin Royale of living specimens of practically all the Canadian flora, which remained alive there ten years after their donation, with a descriptive catalogue which is reproduced in facsimile in the Appendix. It is said that he himself transplanted and watched over each of these plants as he studied them, and forwarded descriptive memoranda upon them with written instructions as to their care and directions to collect the seed and return it to him.

Of his original descriptions of plants not previously known, the most important treats of the "Pitcher Plant," which grows throughout America and was called by Tournefort after him the *Sarracena purpurea*, its botanical name to-day. His description of it is given with the same luxury of detail that characterizes his contributions on animal anatomy. It is published in full here and should be read.

A later botanical contribution of his that touches on a subject of national importance is that published in 1730 in the *Mémoires de l'Académie* on the "Sugar Maple." He describes four varieties in the country, notably "*l'Acer canadense saccharifer̤um fructu minori*," and states that the French, following the Indians, know the sugary character of its sap in springtime, the climatic conditions favourable for a good running (snow, thaw, frost), and how much sugar a tree three or four feet round will give in a season. Competent authorities give him the credit, if not for the discovery, at least for the industrialization, of maple sugar. A specimen of the sugar maple was included in his large donation of plants to the Jardin in 1704. The "Blueberry" is another common Canadian fruit which Sarrazin made known in France.

An outcome of his insight into plant life, significant of his truly extraordinary sagacity and foresight in the application of natural laws, is a fact told us elsewhere in this book (page 146-146), when dealing with his activities for the civic welfare. As a member of the Conseil Superieur he had been asked to look into the question of harvesting and sowing grain, a vital question then, as now, in a country with short seasons, and Dr. Vallée quotes from Kalm that "Dr. Sarrazin had procured in Sweden a small quantity of winter wheat and barley. This was sown (by him) in autumn, passed the winter without damage, and produced fine wheat the following summer, with grains a little smaller than the wheat of Canada. . . ."but this winter grain gave a larger amount of fine flour than the summer wheat. *I have never been able to understand* (wrote Kalm) *why this experience was not continued.*" In view of the modern transformation in the harvest acreage of Canada through the introduction of wheat adapted to a short summer, this practical application at that date of Sarrazin's scientific intelligence is truly astounding.

Sarrazin's first personal observations on the beaver appeared in the Transactions of the Académie Royale for 1704, (through de Tournefort) and reports a minute dissection of an animal weighing fifty pounds. As a model of his fine anatomical style his classic description of the muscles of the back and of their fasciæ and aponeuroses is given verbatim, and is so clear that, as his biographer says, one can reconstruct from it the whole lateral wall. From the functional standpoint his greatest interest centres upon the formation and minute structure of the generative organs; and here he made the curious discovery of a single cloaca, making the distinction of the sexes in the beaver difficult. His most masterly exposition, however, is given of the digestive tract and its linings, and he describes also the false ribs possessed by this animal. Twenty-eight years later he returned to this subject and sought other beavers for dissection, to confirm and extend his earliest observations.

Sarrazin's masterpiece in zoology was how-

ever presented in 1725 through Réaumur, and is entitled "An extract of Various Memoirs of Monsieur Sarrazin on the Muskrat." It is illustrated by sixteen different figures made by himself (failing another draughtsman). The description of the stomach and the changes that take place in it during digestion and on summer and winter diet is a classic, and in view of his limitation to a "loupe," or some elementary form of microscope, is a real *tour de force*. He described also the carcajou, the "vache marine," "loup-marin," and in great detail the porcupine, describing in the latter animal seven different kinds of skin and discussing at great length the question as to whether it throws its spines when attacked; as usual he delays upon the subject of the genitalia in which he finds a number of small peculiarities. He even attempted to dissect a skunk, but gave it up "because it had a dreadful smell, capable of making a whole canton desert,"

VI. SARRAZIN IN SOCIAL AND POLITICAL LIFE
VII. AN INTELLECTUAL IN BUSINESS
VIII. THE DESCENDANTS OF MICHEL SARRAZIN
IX. SUCCESSORS OF SARRAZIN

It need scarcely be told that Dr. Sarrazin was essentially a worker, and found little time for relaxation, unless his scientific avocations could be so described. In political matters he was always active, having been elected to the Conseil in 1707, and he was honoured by being appointed Keeper of the Seals in 1733. He did not marry until his fiftieth year, but made a fortunate union then with the young Marie-Anne Hazeur, a lady of good family and position, whose father had owned large properties in the region of Gaspé, and was also Seigneur of Malbaie (Murray Bay). He himself, though apparently of little or no means on his arrival in the country, had become at this time a large proprietor. The remuneration of a "Médecin du roi" was not high, but due to repeated representations on his behalf by the Governors of the colony and others of his friends high in office at Quebec, his salary, which began in 1699 at 300 livres, was raised in 1702 to 600, in 1703 to 800, in 1709 to 1,100 livres, and in 1717, when his petition for an annuity of 400 livres for his son to study medicine in France was granted, it rose to the very considerable sum of 2,000 livres per annum. Desirous of obtaining for his growing family a worthy patrimony, he invested in what should have become extremely valuable land, namely, the fief of St. Jean, an area of six acres, comprising about a quarter of that occupied by the present city of Quebec, and running from the river St. Charles to the Grande Allée, as well as the fiefs St. François and Ste. Genevieve (with manor house attached and many buildings), for the sum total of 7,400 francs by deed of sale dated October 22, 1709. He had also a house on the rue St. Louis and another on the rue Parloir. Through his wife he came into possession of other still more extensive properties in Gaspé, the fief de la Grande Vallée des Monts Notre Dame and the adjoining concession of l'Anse de l'Etang (from which he took the title by which he is known), and a part of the Seignory of Murray Bay. The possession of these combined seigneuries in his own right and that of his wife created him a Grand Seigneur, as is shown by the act of "*foye et hommage*" dated at Quebec July 10, 1726.

But misfortune overtook him in his last years. His house in the rue St. Louis was burnt, depriving him of a rental of 600 livres a year; there was a fall in the paper money of the time, and, worst of all, the failure of slate quarries which had been discovered on his Gaspé property, and in the operation of which he had become heavily involved, reduced him and his family to actual proverty. He died of a malignant contagious fever brought from a ship and caught by him from patients in the Hôtel Dieu of Montreal, where he died after two days of illness on the 6th of September, 1734, in his seventy-fifth year. He was buried without ceremony or éclat in the cemetery of the poor! He was survived by his widow and five children. Of the latter, two only lived to have descendants, Claude Michel Sarrazin de l'Etang, who returned to France, and whose name died in his female succession of the next generation; and Charlotte Angelique, who married Jean Hippolyte Gauthier de Varennes and founded an important French family that survives through several branches in the Province of Quebec to-day. His humble ending did not prevent the public from acclaiming on all sides his goodness and charity and knowledge. His best epitaph was inscribed by the Réligieuses of the Hôtel Dieu of Quebec in their register at the time and reads:

"For more than forty-five years he exercised his art in this country with rare charity, perfect disinterestedness, extraordinary success, surprising address, and an unparalleled devotion for every kind of person, which rendered him able to perform with joy and grace all that lay in his power for the relief of the sick under his care."

The last chapter of this volume visions the future of French Canadian medicine under the title "Les Successeurs de Sarrazin." Space does not permit us to enter upon this topic, nor have we been able to dwell adequately upon the interesting subject of Dr. Sarrazin's social and political relations. But the book is there to be read, and enough has been said here to show not only what manner of man this was whom we must acclaim as the pioneer of scientific medicine in this country, but also that Dr. Vallée's exposition is a solid contribution to the history of medicine on this continent of which the Canadian profession must be most justly proud.